D-3 GABIONS

PURPOSE & APPLICATIONS

A gabion wall is made of stacked flexible woven-wire baskets used to stabilize channels embankments and slopes, and can be used as revetments, retaining walls, abutments, check dams, and for other similar use. It is designed to:

- Protect the soil surface from the erosive forces of concentrated runoff and wave action.
- Slow the velocity of concentrated runoff while enhancing the potential for infiltration.
- Stabilize slopes with seepage problems and/or non-cohesive soils.

CONSIDERATIONS

- Whenever gabions are used along streams, they should be used in combination with vegetation to shade the stone.
- Construction must be sequenced so that the gabions are put in place with the minimum possible delay. Disturbance of areas where gabions are to be placed should be undertaken only when final preparation and placement of the gabions can follow immediately behind the initial disturbance.

SPECIFICATIONS

The design for a gabion wall must follow the manufacturer's specifications but all the following conditions must also be met:

- The design for gabions must include the design storm, riprap stone size and quality and filter specifics.
- The gabions should not be exposed to the abrasion from sand or gravel transported by moving water.
- The Manning's "n" value used for gabions shall be 0.025.
- The pH of the soil and water should be above 5 and the soil and water resistivity is more than 4,000 ohms/cm or plastic coated gabions shall be used.
- A gravel filter or geotextile fabric is needed and must be based on the D_{50} size of the rock used to fill the gabions.
- The rock used to fill the gabions must be larger than the gabion mesh opening.

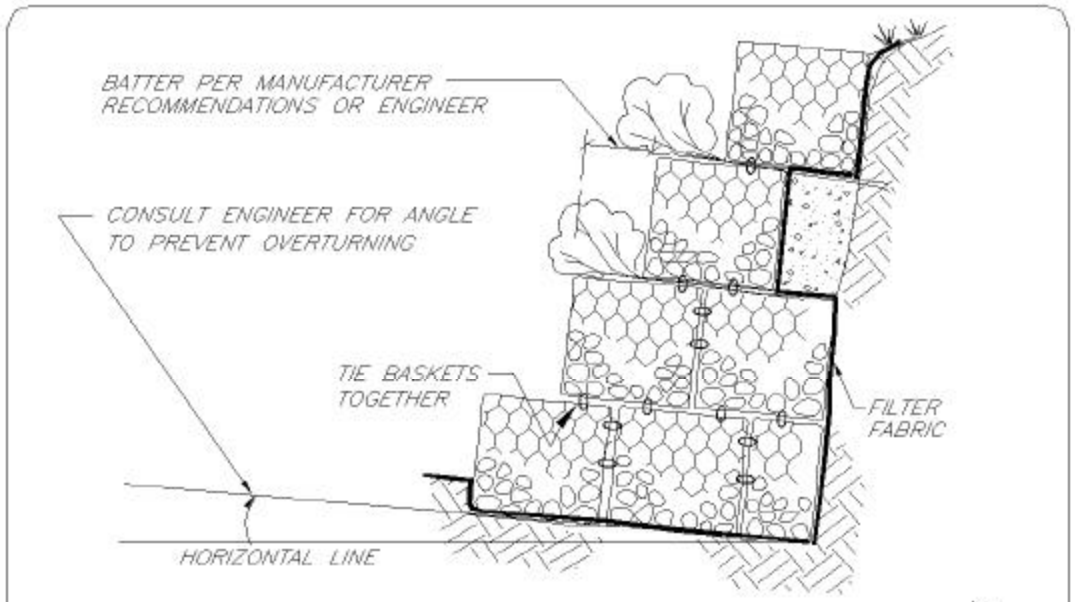
Installation Requirements

- Manufacturer's directions will be closely followed for the installation.
- Care should be taken when placing aggregates to ensure that the sheathing on PVC coated gabions is not broken or damaged.

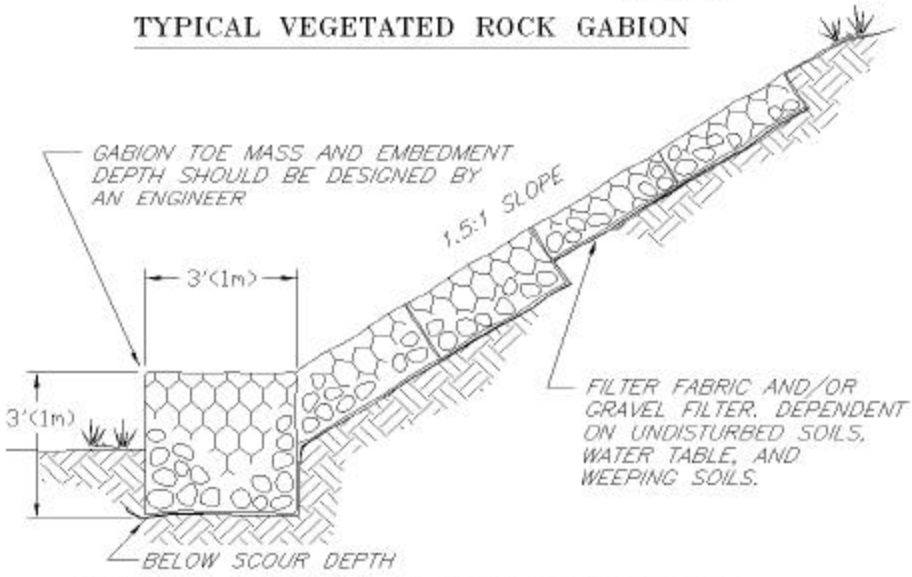
After a gabion has been filled, the lid shall be bent over until it meets the sides and edges. The lid shall than be secured to the sides, ends and diaphragms with the connecting wire in the manner described above for assembly.

MAINTENANCE

Periodic inspection for signs of undercutting or excessive erosion at transition areas is essential and repairs must be carried out promptly.



TYPICAL VEGETATED ROCK GABION



TYPICAL GABION AND GABION MATTRESS

NOTES

1. BEDDING FOR GABION MASS SHALL BE STONE, GRAVEL, SAND OR NATIVE MATERIAL CAPABLE OF SUPPORTING WEIGHT.
2. VINYL COATED BASKETS RECOMMENDED IN WET CONDITIONS TO HELP PREVENT RUSTING AND PREMATURE FAILURE.

GABIONS
FOR
(NON-STREAM APPLICATIONS)

FILE: GABIONS